CLAIMS

1.   Apparatus for generating and testing speech models, said apparatus comprising:

5   a data collection unit operable to collect and store utterance data indicative of the pronunciation of one or more words by one or more speakers;

a speech model generation unit operable to generate speech models of words, utterances of which have been

10   collected by said data collection unit; and

a testing unit operable to test the accuracy of the matching of utterances collected by said data collection unit to speech models generated by said speech model generation unit and to generate a visual display of the

15   results of said testing by said testing unit.

2.   Apparatus in accordance with claim 1, wherein said data collection unit comprises:

a vocabulary database operable to store word

20   identifiers indicative of one or more words;

a speaker database operable to store speaker identifiers indicative of speakers from whom utterance data is to be collected; and

a co-ordination unit operable:

25   to generate a first user interface to enable user

input of speaker identifiers for storage in said speaker database;

to generate a second user interface to enable user input of word identifiers for storage in said vocabulary database; and

to generate a third user interface operable to generate a series of prompts to prompt the utterance of words corresponding to word identifiers stored in said vocabulary database by speakers identified by speaker identifiers stored in said speaker database and to synchronise said series of prompts with the collection of utterance data indicative of pronunciation of words.

3. Apparatus in accordance with claim 2, wherein said series of prompts generated by said third user interface comprises a generation of a series of visual instructions to speakers identified by speaker identifiers in said speaker database to pronounce words identified by word identifiers stored in said word database.

4. Apparatus in accordance with claim 3, wherein said third user interface is operable to generate a series of prompts comprising user instructions to stay quiet immediately preceding and succeeding instructions to

pronounce a word identified by a word identifier, wherein
said collection of utterance data is performed whilst all
of said instructions are displayed.

5   5.   Apparatus in accordance with claim 2, wherein said
third user interface is operable to display a waveform
indicative of collected utterance data whilst said
utterance data is being collected.

10   6.   Apparatus in accordance with claim 2, wherein said
data collection unit is operable subsequent to the
collection of an item of utterance data to generate a
user interface to display a waveform corresponding to
said collected utterance data and to permit user deletion
15   of stored utterance data displayed by said data
collection unit.

7.   Apparatus in accordance with claim 2, wherein said
data collection unit is operable subsequent to the
20   collection of an item of utterance data to output audio
data corresponding to said collected utterance data and
to permit user deletion of stored utterance data output
by said data collection unit.

25   8.   Apparatus in accordance with claim 2, wherein said

data collection unit further comprises a selection unit operable to generate a user interface enabling user selection of speaker identifiers stored in said speaker database and word identifiers stored in said vocabulary database wherein said co-ordination unit is operable to generate a third user interface to generate a series of prompts to prompt the utterance of words corresponding to selected word identifiers by speakers corresponding to selected speaker identifiers selected utilizing said selection unit.

9. Apparatus in accordance with claim 2, wherein said co-ordination unit is operable to generate said prompts to prompt the utterance of words by identified speakers a number of times for each of said words and speakers wherein said number of prompts is determined by the number of items of utterance data stored by said data collection unit associated with said words and said speakers.

10. Apparatus in accordance with claim 1, wherein said speech model generation unit comprises a selector for selecting utterance data wherein said speech model generation unit is operable to generate speech models utilizing said utterances selected by said selector.

11. Apparatus in accordance with claim 10, wherein said selector comprises:

a user interface enabling a user to identify words and speakers associated with utterance data stored by said data collection unit, wherein said speech model generation unit is operable to generate speech models of words utilizing said utterance data associated with said identified speakers and words.

12. Apparatus in accordance with claim 11, wherein said speech model generation unit further comprises a data store operable to store constraint data wherein said speech model generation unit is operable to generate speech models of words where said identification of words and speakers made utilizing said selector fulfils the requirements defined by said constraint data.

13. Apparatus in accordance with claim 12, when said speakers are each associated with gender data wherein said constraint data comprises data identifying a relationship and the gender data of said identified speakers must fulfil.

14. Apparatus in accordance with claim 12, wherein said constraint data comprises data indicative of a number of

utterances wherein said speech model generation unit is
operable to generate speech models of words when said
data collection unit has stored utterance data associated
with said identified speakers selected by said selector

5   corresponding to the number of repetitions identified by
said constraint data of said words selected by said
selector.

15.   Apparatus in accordance with claim 1, wherein said

10   testing unit is operable to generate a user interface to
enable a user to identify speech models generated by said
speech generation unit and to select utterance data
stored by said data collection unit and to test said
identified models utilizing said selected utterances.

15

16.   Apparatus in accordance with claim 15, wherein said
testing unit is operable to generate a user interface
enabling a user to identify sets of utterances collected
by said data collection data corresponding to utterances

20   indicative of the pronunciation of different words by
different speakers, said testing unit being responsive
to the selection of said sets of utterance data to test
speech models generated by said speech model generation
unit utilizing said selected sets selected of utterance

25   data.

17. Apparatus in accordance with claim 16, wherein said testing unit is operable to enable user selection of sets of utterances comprising utterance data collected from the speakers from whom utterance data was utilized by said speech generation unit to generate said speech models being tested.

18. Apparatus in accordance with claim 17, wherein said testing unit is operable to enable user selection of sets of utterances comprising utterance data collected from speakers, utterance data from whom was not utilized by said speech generation unit to generate said speech models being tested.

19. A storage medium having computer implementable instructions stored thereon for generating within a programmable computer apparatus in accordance with any of claims 1 to 18.

20. A storage medium in accordance with claim 19, comprising a disk.

21. A disk in accordance with claim 20 comprising magnetic, optical or magneto optical disk.

22. A storage medium in accordance with claim 19 comprising an electrical signal in a communications network.

23. A method of collecting utterance data comprising the steps of:

displaying a first user interface to enable user input of speaker identifiers and storing said speaker identifiers in a speaker database;

displaying a second user interface to enable user input of word identifiers and storing said word identifiers in a vocabulary database;

displaying a series of prompts to prompt the utterance of words corresponding to word identifiers stored in said vocabulary database by speakers identified by speaker identifiers stored in said speaker database; and

synchronising the collection of utterance data indicative of the pronunciation of words with said series of prompts.

24. Apparatus for collecting utterance data indicative of the pronunciation of one or more words by one or more speakers, the apparatus comprising:

a data collection unit operable to collect and store

utterance data indicative of the pronunciation of one or more words by one or more speakers;

a vocabulary database operable to store word identifiers indicative of one or more words;

a speaker database operable to store speaker identifiers indicative of speakers from whom utterance data is to be collected; and

a co-ordination unit, said co-ordination unit being operable:

to generate a first user interface to enable user input of speaker identifiers for storage in said speaker database;

to generate a second user interface to enable user input of word identifiers for storage in said vocabulary database; and

to generate a third user interface operable to generate a series of prompts to prompt the utterance of words corresponding to word identifiers stored in said vocabulary database by speakers identified by speaker identifiers stored in said speaker database and to synchronise said series of prompts with the collection of utterance data indicative of pronunciation of words.

25.   A method of generating speech models comprising the steps of:

providing a computer system operable to collect utterance data, to generate speech models utilising said collected utterance data and to test the accuracy of matching utterances to said generated speech models;

5   collecting data indicative of the pronunciation of one or more words by one or more speakers utilising said apparatus;

generating speech models utilizing said collected utterances;

10   determining whether said accuracy of said generated models is satisfactory by testing said models utilizing said apparatus; and

outputting speech models determined to be satisfactory in said determination step.